ICT Adoption in Executive Training for Development

Blending Digital and Physical Communication and Awareness Channels

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ABSTRACT

Digital capacity building is a key policy for states to meet the Sustainable Development Goals. This paper[1] presents one of the actions carried out by the United Nations Conference on Trade and Development (UNCTAD) in collaboration with the Swiss Federal Institute of Technology in Lausanne (EPFL) to tackle the multifaceted digitization challenges in developing and transition economies by introducing blended learning in one of its flagship executive courses. The main outcome is the obvious but generally neglected importance of focusing on the added values, the competence development, and confidence building for all stakeholders to trigger adoption. These objectives are partially tackled by blending digital and physical communication and awareness channels in face-to-face executive training sessions.

CCS CONCEPTS

• **Information systems applications**; • **Human computer interaction (HCI)**; • **Collaborative and social computing**;

KEYWORDS

Digital education; executive training; blended learning; discussion channels; participation; knowledge sharing; community building

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1 INTRODUCTION

Digital capacity building is a key policy for states to meet the Sustainable Development Goals[2] (SDGs). Governmental organizations and ministries in charge of such policy implementation cannot really promote it if they do not first fully adopt themselves digital technologies and digital (knowledge) management practices. This paper (*report on practitioner projects*) presents one of the actions carried out by the United Nations Conference on Trade and Development (UNCTAD) in collaboration with the Swiss Federal Institute of Technology in Lausanne (EPFL) to tackle the multifaceted digitization challenges in developing and transition economies by introducing blended learning in its P166 executive course[3] for young ministry of commerce or finance officers as both a means (to teach) and an end (to promote digitalization).

First, the paper describes the missions of UNCTAD and its objectives with the P166 course on key issues on the international economic agenda. Then, the blended learning course scenario based on Information and Communication Technology (ICT) implemented in this context is introduced. The enabling digital technology deployed and its purposes are also presented. Finally, validation results related to adoption in four instances of the P166 course are details and discussed.

2 UNCTAD AND ITS MISSIONS

The United Nations Conference for Trade and Development (UNCTAD) was established by the United Nations General Assembly in 1964 and is a permanent intergovernmental body of 194 member states. It is located in Geneva, Switzerland, and has liaison offices in New York and Addis Ababa. UNCTAD is part of the UN Secretariat. It reports to the UN General Assembly and the Economic and Social Council but has its own membership, leadership, and budget. The mission of UNCTAD is to support developing countries to access the benefits of a globalized economy more fairly and effectively and to help equip them to deal with the potential drawbacks of greater economic integration.

[2]https://www.un.org/sustainabledevelopment/sustainable-development-goals/
[3]https://p166.unctad.org

Together with other UN departments and agencies, UNCTAD develops its activities in the context of the SDGs, as set out in the Agenda 2030. Although the word "Executive Education" (ExEd) is not often used in the UN context, UNCTAD designs and delivers high-level courses on various topics related to development economics in order to enhance the ability of current and forthcoming developing countries policy makers to support their countries economic and trade development and eradicate poverty. In this context, the most global and successful programme of UNCTAD is the Course on Key Issues on the International Economic Agenda, often referred to as well as the "Paragraph 166" Course, which can be considered as UNCTAD executive education course on trade and development for policy makers. This worldwide programme covers all the substantive and research issues of UNCTAD, such as Digitalization, Trade and Development [2], and is delivered in all developing regions, with three-week courses being organized consecutively in Africa, Latin America and the Caribbean, Asia-Pacific, Western Asia and the countries of Economies in transition. Participants are government officials and the faculty is composed of UNCTAD economists and local experts. It is managed in UNCTAD by a small team under the responsibility of the Knowledge Development Branch in the Division on Technology and Logistics.

The investigations discussed in this paper were carried out in 2017 in Africa (Mauritius, with 24 participants, 12 women, 12 men), Latin America Caribbean (Medellin, with 22 participants, 11 women and 11 men), and Asia Pacific (Singapore, with 25 participants, 10 women and 15 men), as well as in 2018 in Economies in transition (Belgrade, with 23 participants, 12 women and 9 men).

3 BLENDED LEARNING COURSE SCENARIO

Blended learning is the combination of face-to-face and digital interactions in the learning context and encompasses several approaches. One of them is to combine online content with face-to-face discussions, another is to integrate online tasks (e.g., collaborative editing, online simulations) in the classroom and a third one is to mix face-to-face and digital activities (e.g., discussions, quizzes), to enrich classroom interaction [3]. In this paper we focus on the third approach.

3.1 General context

UNCTAD has developed widespread eLearning programs [1], in particular in some substantive areas like e-Commerce and Port Management. However, it currently confronts three main challenges in the development of innovative EdTech solutions: financial, topical and cultural. The financial challenge comes from the decreasing funding from Member states and other potential donors. UNCTAD teams consequently have to devote increasing time to fundraising and manage priorities. Attempts to use innovative software solutions often have to rely on limited-duration trial versions, or on "light" licensing agreements, which cannot give the possibility to use the technology full potential. The topical challenge lies in the organizational logic of the so-called intergovernmental machinery, where work plans and corresponding resources are discussed and approved along the lines of the substantive programs. As it was the case some years ago in the private sector, IT-related investments may be considered as support activities and not necessarily receive the highest level of priority. The third challenge is cultural, as technological innovation, not being in the direct origin of UNCTAD's mandate, may not always be perceived, both internally and by some UNCTAD stakeholders, as an indispensable operational success factor. Corresponding expertise is scarce and not always recognized. Although this last characteristic was not particularly diriment in the last century, it needs to evolve in the contemporary knowledge-based world.

3.2 Scenario

The implementation scenario relies on a progressive introduction of active [4] and blended [6] learning in the P166 course at a pace set by the instructors. The chosen blended learning scenario relies on the use of ICT in a traditional face-to-face classroom setting and includes an introductory session of one hour to explain the objectives to the participants, to present the technology, and to practice it. In 2017, the last three days of the 5-day Module I on "development policies and the role of international trade and finance in a globalized world" were selected for experimentation. In 2018, the four days of Module III on "Enhancing productive capacities through foreign direct investment, enterprise development and science, technology and innovation" were selected for experimentation. In both cases, pedagogical design sessions with the experts and the instructors were held at UNCTAD prior to the beginning of the course to introduce the technology to instructors and to devise the implementation and the digital intervention strategy.

Four experimentation principles were defined and shared with the participants during the introduction of the selected modules: 1) The experimentation would be a unique opportunity to benefit from cutting edge technology at no cost for UNCTAD and its beneficiaries; 2) observations and data interpretation would be totally anonymous; 3) participation would be on a voluntary basis; 4) all posted comments, answers and questions would be destroyed at the end of the observation period.

4 ENABLING DIGITAL TECHNOLOGY

Two digital technologies were partially introduced in the framework of a MoU between UNCTAD and EPFL to support the proposed progressive scenario. First, the SpeakUp mobile app [7] supporting rich classroom interaction. Second, the Graasp social media platform [5] supporting knowledge sharing and collaborative learning. Both solutions are open access and free. They are also developed in the context of innovative digital education actions in academia and promoted though nonprofit associations, members of the Swiss EdTech Collider[4] located on the Innovation Park of EPFL. The fact that the solutions are noncommercial is an important adoption factor at the organizational level, considering that it should be used by governmental representatives from various "geopolitical" blocs. In addition, both solutions offer analytics directly to the end users to help them be aware of the ongoing activities and reflect on their teaching and learning practices (compared to google analytics which is targeting platform owners). For this poster paper, only the experimentation carried out with SpeakUp are discussed.

[4] https://edtech-collider.ch

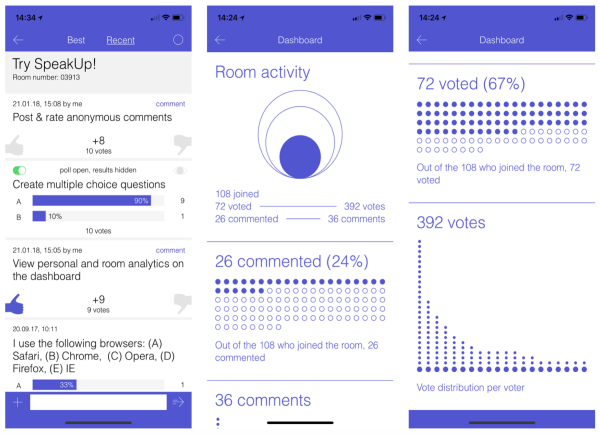

Figure 1: Screenshots of the SpeakUp application (the left-hand side part shows the main discussion screen, while the right-hand side parts show the analytics panels)

SpeakUp (see Figure 1) enables participants to ask anonymous questions or vote and comment questions from others. It also enables instructors to collect anonymous opinions or ask multiple choices questions. The app can be accessed without login or registration either from a smartphone or a computer through a browser. There are several learning scenarios that can be supported by this application (Table 1), which require different levels of adaptation to a traditional lecture setting.

On the first level, we find the *ask-me-anything* scenario. In this scenario the application is used as digital channel to collect participant inputs (questions and comments) during the lecture. The instructor responds to these messages orally at the end of the lesson or during a break. This scenario requires that participants have access to an Internet enabled device (phone or computer), but does not require any particular preparation for the instructor. Nevertheless, it should be noted that while this scenario is in principle the easiest to setup and can significantly increase classroom interactions, it can generate some off topics comments, which might need some monitoring and, in some cases, could disrupt the class.

On the second level, we find the *take-a-poll* scenario, where the instructor asks multiple choice questions to the audience to assess their knowledge or to poll their opinion. In this scenario, the instructor prepares questions and answers in advance. Such a scenario can be coupled to group discussions and trigger deeper active learning through peer instruction. It is typically used in flipped classroom settings.

On the third level, we find the *think-pair-share* scenario. In this scenario, the instructor asks an open question to the audience. The audience is instructed to think about the question, then discuss it in pairs, post an answer on the application, read the answers of others and express their agreement or disagreement with them by up or downvoting other people's comments. This scenario also uses an active learning approach with peer instruction. It furthermore allows teachers to get a rich overview of the audience's opinions on a subject, which is very hard to replicate in a purely face-to-face activity or with closed multiple choice questions. This scenario is nevertheless more time consuming than the others and requires the most change in terms of how a traditional classroom is conducted.

Table 1: Adoption of the various scenarios implemented (number of content-related messages)

Instances	ask-me-anything	take-a-poll	think-(pair)-share
Mauritius	62 (anonymous)	7	1
Medellin	36 (nickname)	8	3
Singapore	1	15	0
Belgrade	22	16 questionnaire + 6 sessions	2

Finally, SpeakUp provides a learning analytics dashboard to give an overview of the online activity (Figure 1). This feature was designed to motivate user contribution through feedback and to support awareness and reflection.

5 VALIDATION RESULTS

The main research questions tackled in the framework of the experimentation carried out in the four instances of the P166 course were: 1) Would the digital technology be adopted by the instructors and how ? 2) Would the digital technology be adopted by the participants and how ?

The **first question** related to the adoption by the instructors was tackled through direct discussions with them before (preparation stage) and after (wrap up stage) the modules, as well as through observation during the sessions themselves. The main adoption barriers were: a) the lack of confidence regarding their ability to manage the technology live in front of the participants. This issue was resolved by having another expert handling the digital communication channel in the classroom; b) the fear to disturb a well-tuned teaching delivery scheme. This feeling was reduced by a progressive deployment with first only the *take-a-poll* scenario, augmented progressively with *think-(pair)-share* (pair is between brackets as this intermediary step if often skipped), before jumping on a potentially more disruptive and challenging *ask-me-anything* scenario. The table 1 shows how these various scenarios were exploited in the four instances of the course.

Overall, it is only after having experimented the various scenarios for one module that the instructors feel confident enough in their digital competences and see clearly enough the benefits to definitely adopt the technology. This highlights the importance of offering digital coaches or experienced colleagues to assist them during the face-to-face sessions, a modality we can define as collaborative or blended teaching (with the instructors and the experts present taking alternatively the role of speaker or coach).

The **second question** related to the adoption by the participants was tackled through observation during the sessions, as well as post questionnaires and semi-guided interviews. The main comments in Mauritius were that the technology enables to ask questions without interrupting the instructor(s) and triggers discussions on topics not planned but of interest for the audience. Written questions were also highlighted as useful to go over the language barrier

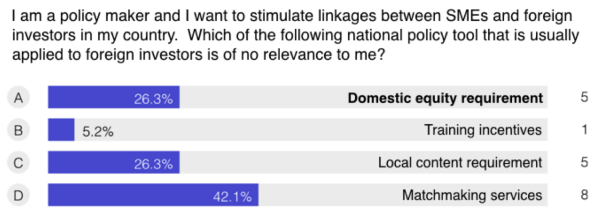

Figure 2: Answers of a MCQ displayed live to trigger discussions with the participants (the correct answer is A)

for people communicating in their second language, as well as to overcome shyness. This was especially true for Mauritius were the audience was mixed between French and English-speaking participants. Conversely, in Singapore, oral interventions were favored by the participants. In term of adoption, quite a few participants (25%) expressed spontaneously the wish to use SpeakUp at their workplace. Feedback in the other countries was consistent with the outcome of Mauritius.

In Belgrade, a standard pre-questionnaire integrating 16 multiple choice questions (one example is given in Figure 2) to assess the competences of the participants was delivered using SpeakUp (*take-a-poll*). The anonymous answers of the audience on each item enabled the three instructors managing the session together to immediately identify the topics to be deepened and triggered discussions with the audience. The participants having not provided right answers also appreciated to see that they were not alone and that for most questions people had different opinions.

The detailed survey (online anonymous questionnaire) conducted in Medellin showed that 84% of the participants found SpeakUp useful and 83% easy to use. Finally, 77% of them found the analytics useful for awareness and reflection, contributing as such to the adoption by both the instructors and the participants.

6 DISCUSSIONS AND FUTURE WORK

The validation carried out highlights some interesting benefits of blending learning using an additional digital communication channel to increase participation in face-to-face executive training activities as delivered by UNCTAD. It also confirms that, in this framework, it is challenging for instructors to get confident enough to adopt the technology, but that after a first hands-on implementation with coaching they see its added value and get motivated to continue and refine further their teaching scenarios.

Following the increasing interest for the *think-(pair)-share* scenario, the SpeakUp interface will be adapted to ease its implementation by displaying part of the answers and by providing better analytics regarding its outcome (there are currently no easy ways to discriminate between open *ask-me-anything* questions and *think-pair-share* contributions).

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